

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference 67756-71350 | FOR FURTHER ACTION See Form PCT/IPEA/416 | |
| International application No. PCT/SE 2003/000587 | International filing date (day/month/year) 11-04-2003 | Priority date (day/month/year) 18-04-2002 |
| International Patent Classification (IPC) or national classification and IPC H04L 12/56 | | |
| Applicant Terraplay Systems AB et al | | |

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☒ (sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

| | |
|---|---|
| Date of submission of the demand 30-10-2003 | Date of completion of this report 14-05-2004 |
| Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88 | Authorized officer Ralf Boström /LR Telephone No. +46 8 782 25 00 |

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1 - 11 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished

pages* _____ as amended (together with any statement) under Article 19

pages* 12 - 14 received by this Authority on 29 - 04 - 2004

pages* _____ received by this Authority on _____

☒ the drawings:

pages 1 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|-------------|-----|
| Novelty (N) | Claims | <u>1-13</u> | YES |
| | Claims | <u>---</u> | NO |
| Inventive step (IS) | Claims | <u>1-13</u> | YES |
| | Claims | <u>---</u> | NO |
| Industrial applicability (IA) | Claims | <u>1-13</u> | YES |
| | Claims | <u>---</u> | NO |

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1. US 5892754 A

D2. Terraplay: "Introduction to the Terraplay system", version 2.0, 12th of June 2001.

The commonly used methods for flow control can not be optimized for specific applications. The invention according to the present application aims to solve this problem.

D1, which is considered to represent the most relevant state of the art, discloses a system for adaptive flow control (see abstract). The flow control is adapted to the current state of the network. Further, the flow control is optimized for the applications in the network. The network software in the system (which corresponds to the generic algorithm in the application) monitors a number of parameters in the network. The values of these parameters are reported to the applications (that correspond to the applications specific control means in the present application) (see column 2, line 48-52). The applications adapt their function (for example the type of coding) based on the values of these parameters.

The applications in D1 notify the network software about desired values on certain parameters (see column 3, line 34-38). These parameters are used for defining a desired quality of service (see column 3, line 5-7). The latency is one of the parameters that are used for controlling the quality of service (see column 5, line 22-28).

D2 is a background art document.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

The invention differs from D1 in that the generic control means is implemented in the receiver terminal. In D1 the network software, which correspond to the generic control means, is implemented in the network. It is not considered obvious to the skilled person to modify the system in D1 so that it includes a generic control means in the receiver terminal. Furthermore, in the cited documents there are no suggestions leading a person skilled in the art to include this feature in the system described in D1. Consequently, the invention according to claims 1-13 is novel and involves an inventive step. The invention is considered to be industrially applicable.

Claims (amended)

1. An arrangement for adaptive rate control of when packets are to be transmitted in a connection between a sender and a receiver in a packet switched data network, said arrangement comprising

generic control means (G-ARC; 27, 31) arranged in the sender and the receiver, for performing adaptive rate control according to a generic algorithm and at least one application specific control means (S-ARC; 29) to control the function of the generic control means (G-ARC; 27, 31) in dependence of the characteristics of the application, said arrangement being **characterized** in that the application-specific control means (S-ARC; 29) is arranged in the receiver to enable application specific control of the communication performed on the receiver side.

2. An arrangement according to claim 1, wherein the generic control means (G-ARC; 27, 31) is controlled by at least one configuration parameter and said application-specific control means (S-ARC; 29) is arranged to provide the at least one configuration parameter to the generic control means for controlling the function of the generic control means.

3. An arrangement according to claim 1 or 2 wherein the generic control means (G-ARC; 27, 31) is arranged to monitor the quality of the rate control and output a set of quality data indicative of such quality.

4. An arrangement according to claim 3, wherein the set of quality data includes measurements of latency and/or packet loss.

5. An arrangement according to any one of the preceding claims, wherein the set of quality data is provided to the application-specific control means (S-ARC; 29) and used by the application-specific control means (S-ARC; 29) to set the at least one configuration parameter.

6. An arrangement according to any one of the preceding claims, wherein the generic control means (G-ARC; 27, 31) is implemented in at least one network server and in low-level client software.

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7. An arrangement according to any one of the preceding claims, wherein the application-specific control means (S-ARC; 29) is implemented as an application-level software module.

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8. An arrangement according to any one of the preceding claims, wherein the application-specific control means (S-ARC; 29) is dependent on the type of channel (5) used for the connection.

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9. A computer program product intended for use in a receiver of communication in a packet-based data network, for adaptive rate control performed at the receiving side in a packet data network, said product comprising computer readable code means which, when run on a computer causes the computer to provide at least one configuration parameter to a generic control means for adaptive rate control, in order to control the adaptive rate control provided by the generic control means.

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10. A computer program product according to claim 9, wherein the ARC statistics data includes measurements of latency and/or packet loss.

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11. A computer program product intended for use in a receiver of communication in a packet-based data network, for adaptive rate control performed at the receiving side in a packet data network, said product comprising computer readable code means which, when run on a computer is arranged to receive from an application-specific control means at least one configuration parameter in order to control the function of the computer program product.

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12. A computer program product according to claim 11, further arranged to monitor the quality of the rate control and output a set of quality data indicative of this quality.

5 13. A computer program product according to claim 11 or 12, further arranged to transmit said quality data to the application-specific control means.